UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

STATEMENT OF BASIS

Beazer East, Inc.
(former Koppers Company facility)
1555 North Marion Street 62901
ILD 000 819 946

1.0 INTRODUCTION

This *Statement of Basis* explains a set of proposed remedies that address contamination in the soil, ground water, and waterways at the Beazer East, Inc. facility (the former Koppers Company), at 1555 North Marion Street, Carbondale, Illinois (see Figure 1). The proposed remedies focus on contaminant source control and protection of human health and the environment. Contamination at the site is from creosote and other wood-treatment chemicals that were released from 1905 until 1991 when operations ceased and the facility was mostly dismantled. The facility is currently owned by Beazer East, Inc. ("Beazer") of Pittsburgh, Pennsylvania. Beazer plans to prepare the site for industrial redevelopment.

The U.S. Environmental Protection Agency (USEPA) and the Illinois Environmental Protection Agency (IEPA) determined through inspections and document review that the contamination at the facility constituted releases of hazardous waste and hazardous constituents into the environment, within the meaning of Section 3008(h) of the Resource Conservation and Recovery Act (RCRA). In 1986, Beazer entered into an Administrative Order on Consent (Consent Order) under RCRA to define the nature and extent of the contamination and to perform "corrective actions" to clean up hazardous waste releases at the site (USEPA Docket No. V-W-86-R-001, June 4, 1986).

The USEPA is issuing this *Statement of Basis* as part of its public participation responsibilities under RCRA. The purpose of the *Statement of Basis* is (1) to invite public comment on the measures that USEPA is currently proposing for site remediation, and (2) to invite proposals for alternative remedies. Following review of the public comments, the USEPA will select specific remedies and describe these in a public notice called a *Response to Comment and Final Decision.* Beazer will then produce a document for USEPA approval titled *Corrective Measures Final Design* that describes in detail how the remedial measures will be constructed and implemented. Once approved, Beazer will implement the cleanup remedies.

Information can be found at the end of this document on how to submit comments and how to locate the documents that are referred to in this *Statement of Basis*.

USEPA proposes that Beazer implement measures to remove, control, and/or contain the contamination. This approach will eliminate, or minimize, exposure of human and environmental receptors (i.e., plants and animals) to unsafe levels of the contamination.

The targeted cleanup levels correspond to the risk-levels for exposure in an industrial setting, per the requirements of the Illinois Tiered Approach to Corrective Action Objectives[1] (TACO). Additional remedial measures may be proposed in the future, depending on the outcome of further sampling and analysis.

This *Statement of Basis* summarizes information that you can find in greater detail in the *Remedial Facilities Investigation*, *CAMU Demonstration Report*, the *Focused Feasibility Study* and other documents that are part of the Administrative Record. At the end of this notice are the addresses of places where you can review the Administrative Record.

2.0 Summary of Proposed Remedies

The USEPA is proposing a number of corrective action remedies at the facility: (refer to Figure 2).

2.1 The Construction of a Corrective Action Management Unit

A corrective action management unit (CAMU) is a waste containment area, like a secure landfill, located within a facility's boundaries that is used for storing and managing wastes from corrective actions at that facility. At Beazer, approximately 18,000 cubic yards (cy) of contaminated soils, debris, creek sediments, and waste piles are proposed to be contained within a 5.5-acre CAMU.

2.2 The Relocation of Glade Creek and the Construction of an Interceptor/Barrier Trench

Creosote and contaminated groundwater discharge into a segment of Glade Creek which runs through the property. To isolate the stream from the source of contamination, Beazer would relocate a 1,600-foot segment of the stream to a clean area to the east. The clean soils from the excavation would be used to backfill the old channel.

A trench would be excavated to an approximate 30-foot depth within the (former) Glade Creek channel to intercept creosote beneath the ground surface, for collection and shipment off-site for re-use or disposal. Discharged groundwater would be treated on-site, then routed to the Carbondale publicly owned treatment works (POTW). This remedy would mitigate potential source migration to the new creek channel through

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[1] Illinois Environmental Protection Agency, State of Illinois Rules and Regulations, Title 35: Environmental Protection, Subtitle G: Waste Disposal, Chapter 1, Tiered Approach to Corrective Action Objectives

measures to maintain the existing hydraulics. The excavated soils and sediments would be placed within the CAMU.

2.3 Excavation of Glade Creek Sediment

In Glade Creek, Beazer would excavate approximately 3,500 cy of visibly contaminated sediments upstream and downstream of an existing grout blanket, dewater the sediments, and transport them to the CAMU.

2.4 Placement of a Cover over Certain Soil Contamination

A low-permeability cover would be placed on 22 acres of the “former process area” where soil contamination exceeds safe exposure levels. The purpose of the cover is to provide a barrier between the soil, and human and environmental receptors, and to reduce contaminant migration from rain water infiltration.

2.5 Extraction of Dense Non-Aqueous Phase Liquid (DNAPL)

Beazer would install a DNAPL recovery well system in the former process area to collect creosote for off-site reuse or disposal. Groundwater that is extracted along with the DNAPL would be treated on-site and then routed to the Carbondale POTW.

2.6 Waste Pile Containment

Two 10,000 cy soil waste piles that were created during an earlier remedy would be sampled to determine whether soil contamination exceeds safe exposure levels. For the purposes of this document, it is assumed that applicable criteria will be exceeded, and the waste piles would be transported to the CAMU.

2.7 Monitoring Contaminated Sediments

Sediments of Smith Ditch, Glade Creek, Crab Orchard Creek, and Piles Fork are contaminated with creosote and other site-related constituents. Visibly contaminated sediments from portions of Glade Creek are proposed for excavation and placement within the CAMU. The proposed remedy for the remaining contaminated sediments is monitored natural attenuation (MNA). The sediments would be left in place and subject to natural breakdown and dispersion through biological, chemical, and physical processes. MNA requires a monitoring program to measure its predicted effectiveness and a contingency plan to become activated, as required.

2.8 Backfilling and Sealing Selected Wells

Thirty-seven wells that have been dropped from the site-wide groundwater monitoring network are proposed to be decommissioned as a remedy to minimize the wells’ potential to serve as possible long-term migration pathways for DNAPL and site constituents between hydrologic units.

2.9 Elimination of Discharge Point into Smith Ditch

A surface water underdrain system from the former process area discharges contaminated water into Smith Ditch. This discharge point is proposed to be eliminated during construction of the soil cover remedy.

2.10 Backfilling of the Small Unnamed Pond

A small pond (apparently excavated) west of Glade Creek is contaminated as evidenced by an oily sheen on the water and dark, creosote-like staining along its banks. The pond is proposed to be emptied and backfilled to eliminate it as a human and environmental exposure point.

2.11 Institutional Controls

Use-restrictions would be imposed at the facility to reduce risk of human exposure to contaminated media. Currently, the proposed controls include prohibiting the use of groundwater for drinking water, restricting future land use to industry, restricting excavation in the former process area (i.e., basements), and requiring current and future workers, including utility workers, to follow a *Health and Safety Plan.*

2.12 Monitoring of Groundwater

Long-term post-remediation groundwater monitoring is proposed for a period of 30 years or longer. USEPA requires that the contaminated groundwater be contained within its current boundaries; a groundwater management zone will be established. Twenty-nine wells have been selected to provide site-wide coverage including the facility perimeter. The wells would be used to monitor for potential off-site migration of site constituents and are screened at various depths to monitor the different hydrogeologic units (vertical zones in the aquifer). If the contaminated groundwater should ever migrate beyond its current extent, then additional remediation measures would likely be needed. The containment remedy can be terminated if or when the groundwater quality has been restored to levels that allow for unrestricted use.

Each of these remedies is described in further detail in Section 5 of this *Statement of Basis*.

3.0 Site History

The Beazer facility was at one time the world's largest creosote wood-treatment plant. During its operations from 1905 to 1991, the plant could treat as much as 16,250 cubic feet of wood per day. While operating, the plant spilled and released an unknown (but large) quantity of chemicals at several locations within, and adjacent to, the facility.

Site investigations have identified creosote, creosote-related contaminants, pentachlorophenol (PCP), polycyclic aromatic hydrocarbons (PAHs), and arsenic in surface soils, subsurface soils, surface water, groundwater, and creek sediments. Creosote is heavier than water and is made of multiple compounds, many of which do not dissolve in water, and some that do. The term for a heavy liquid like creosote is “dense non-aqueous phase liquid,” or DNAPL. The DNAPL at the facility occurs as “free-phase” contamination, which means that it is an immiscible liquid (unable to mix or blend) in the subsurface that is capable of flowing into a well or migrating laterally or vertically through an aquifer. Investigation of the subsurface conditions demonstrate a fairly low permeability in the upper aquifer, thus limiting the ability to extract DNAPL. The DNAPL has pooled in some areas, and has accumulated on an impermeable clay layer at a depth of 30 feet. Figure 3 shows an estimation of the horizontal extent of DNAPL; the vertical extent of DNAPL migration is approximately 30 feet below the ground surface where it is prevented from migrating further downward by a confining clay layer. “Residual” DNAPL resides in openings in the soil, such as pores and fractures, and is held there by capillary forces. In the groundwater, both the free-phase and residual DNAPL discharge chemicals that dissolve in water continuously (“dissolved-phase constituents”) and form a plume of aqueous-phase contamination.

Much of the current information about the site is the result of a remedial investigation during the 1980's which is reported in *Remedial Investigation Report, Carbondale Wood-Treating Site, Carbondale, Illinois,* revised October 1991. The report concludes that organic and inorganic constituents are present above background levels in soil, groundwater, surface water, and sediment. The report includes these elements:

1) a summary of the site background and history,
2) a description of the scope of the field investigations,
3) a description of the conditions within and around the site,
4) a conceptual site model,
5) an evaluation of data generated during investigations,
6) a discussion of the fate and transport of contaminants, or site-related constituents,
7) an uncertainty analysis, and
8) a discussion of potential preliminary remedial technologies.

Another key background document is the *Data Summary Document: Former Koppers Wood-Treating Site, Carbondale, Illinois,* 1997 (*Data Summary Document*).

In July 1991, wood treating operations were discontinued. Beazer performed various closure activities including building demolition, control of contaminated discharges to Glade Creek, and construction of soil covers. Beazer will complete the cleanup of the property for redevelopment as an industrial business.

A Beazer caretaker currently maintains the site. The caretaker periodically removes accumulated creosote and groundwater from the Glade Creek grout blanket and sump, operates the on-site water treatment system, and conducts required site investigation activities and quarterly groundwater monitoring.

4.0 Summary of Risks to Human Health and the Environment

The main areas of contamination include the former process area, the off-site spill area, Piles Fork Creek, Smith Ditch and Glade Creek sediments, Glade Creek, the small pond, and soil waste piles. Contamination in these areas exceeds ecological and human health risk-based screening levels. Some of the contamination compounds are carcinogenic. The extent to which site-related constituents in these areas exceed human-health screening criteria is described in detail in the *Data Summary Document* and the *Public Health Assessment, Illinois Department of Public Health*, 2000.

4.1 Soils Exposure Risk

Soils at the former process area have high levels of wood-treating compounds, including arsenic and other metals, and polycyclic aromatic hydrocarbons (PAHs). The exposure routes of concern are direct contact, ingestion, and inhalation.

The following site constituents in the soil pose an unacceptable risk of human exposure based on the TACO industrial risk-values:

> arsenic, beryllium, chromium, lead, benzo(a)pyrene, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and pentachlorophenol.

Of the PAHs, benzo(a)pyrene (a carcinogen) is the chemical compound most associated with excessive risk from soil exposure at this facility.

The TACO risk-level thresholds are calculated to represent the increased chance of cancer at a rate of one occurrence in one-hundred thousand people (1×10^{-5}), in an industrial setting. Beazer proposes a soil remedy designed to be protective at the 1×10^{-6} level, or one occurrence in one million people, which is more protective than the industrial-setting risk-threshold under TACO regulations.

<u>Note on Arsenic</u> *This note is relevant to the comparison of alternatives, below*.
Arsenic is a naturally occurring element found in soil. Even when naturally occurring, exposure to a high level of soil arsenic is considered to be a health risk. Generally, when looking at some types of contamination at a facility, like arsenic, a “background level” is established. This is done by analyzing samples from local areas that are not impacted by the facility operations. At the Beazer facility, background testing has shown that the background arsenic level in soil near Carbondale exceeds the human-health risk-based

screening levels. Although arsenic was used in wood treating operations, it is not possible to distinguish whether the arsenic present is background or from a facility release. Nonetheless, at the former process area, Beazer proposes to cover all the areas having elevated levels of site-constituents, including arsenic.

4.2 Groundwater Exposure Risks

Groundwater is contaminated with chemicals used during wood treatment operations including DNAPL, and with dissolved-phase DNAPL chemicals. Numerous monitoring well samples were found to contain contaminants above Federal Maximum Contaminant Levels (MCLs) for safe drinking water, and TACO levels for safe drinking water. Although some DNAPL will be recovered from the site, it may be technically infeasible to remove all of it. The residual DNAPL will likely continue to be a source of dissolved constituents into the groundwater.

However, although contaminant levels are high, there are no identified uses or users of groundwater within two miles of the facility borders. The City of Carbondale has an ordinance prohibiting the use of groundwater for drinking water, and the adjacent farms are connected to the Lakeside Water District. Therefore, it is unlikely that anyone is ingesting groundwater contaminated by the facility. Further, Beazer would prohibit any groundwater use at the facility through “institutional control” remedies (see Section E.11., below). It should also be noted that sampling results from monitoring wells at the site boundaries indicate that contaminated groundwater is not migrating off-site.

5.0 Scope of Proposed Remedies

The proposed remedies in this *Statement of Basis* are stabilization measures to control the sources and migration of contamination through removal, containment, and treatment, and to prevent or minimize the exposure of human and environmental receptors to contaminated media. As discussed above, residual DNAPL in some soil pores and fractures will continue to be a source of contamination of dissolved-phase constituents in the groundwater. Although the contaminated groundwater plume is not currently expanding, the proposed remedy includes monitoring the plume to verify its containment. Should monitoring data demonstrate that unacceptable expansion of contaminated groundwater is occurring, an additional containment remedy will be imposed at the site. Once the free-phase DNAPL is recovered USEPA will evaluate the site-wide monitoring data and the effectiveness of the selected remedies using the *Guidance for Evaluating the Technical Impracticability of Ground-Water Restoration*, (EPA/540-R-93-080, OSWER Directive 9234.2-25, October 1993).

Beazer has developed the proposed measures to various degrees. The engineering details will be submitted in the RCRA *Corrective Measures Final Design Plan*.

5.1 Soil Cover Remedy

Soils at the former process area are contaminated with elevated levels of metals and polycyclic aromatic hydrocarbons (PAHs). The proposed remedy is to construct a low-permeability surface cover over 22 acres of select soils to isolate the soil from human and environmental receptors (see Figure 5). The cover would also serve to limit rain water percolation and subsequent migration of contaminants through groundwater. The boundaries of the surface cover would encompass areas where contamination levels exceed the risk threshold of 1×10^{-6}. Beazer would excavate approximately 570 cy of soils with "coal tar" staining for containment within the CAMU before the cover is constructed.

The final design for the soil cover would depend on future use of the site. The cover would likely be a "combination cap" having some portions constructed of a vegetated 12-inch soil cover and others with asphalt paving, or other design configurations that optimize the planned reuse of the site. Erosion control measures and storm water management would also be part of the final design.

5.2 Glade Creek Channel Relocation/Interceptor Barrier Trench

A large but an undetermined amount of DNAPL and related compounds are in the ground at the "off-site spill area" around Glade Creek. Much of the creosote is from a 1939 spill during a fire when a storage tank was intentionally emptied into a storage lagoon to prevent an explosion. The lagoon was subsequently breached during a rain storm, and the creosote, along with other releases from wood treating operations, remains in the ground. Some DNAPL and contaminated groundwater continue to discharge into Glade Creek from the streambank, despite various efforts to control their release. Currently, a 700-foot cement grout blanket lines the creek bed and shoreline which acts as a barrier to the discharge, although it is not completely effective. Beneath the grout blanket is a collection system that routes the DNAPL into a sump, which is periodically emptied for disposal.

The proposed remedy is to excavate a new creek channel in an uncontaminated area off-site, to the east. The new 1,600-foot channel would begin at a point upstream of the spill area and reconnect with the creek approximately 525 feet downstream of the grout blanket (see Figure 4). The excavated soil would be used as back fill in the old creek channel, following installation of the interceptor trench described below. A permit under Section 404 of the Clean Water Act is required for this project; Beazer has had pre-application meetings with the U.S. Army Corps of Engineers, which is providing some technical support for this remedy. Among other requirements, the permit would include sediment and erosion control measures, and the planting of native riparian-zone vegetation on the shoreline of the new channel.

At the former creek bed, an interceptor trench would be excavated to an approximate 30-foot depth where an impermeable clay layer exists that prevents further downward migration of the DNAPL. Beazer would install a collection system to remove DNAPL from the trench. The system design would include perforated pipe, and a collection sump, recovery pumps or a hand-bailer, depending on the rate and volume of DNAPL accumulation. The trench would be backfilled with high-porosity, permeable material to decrease the velocity of the DNAPL entering the trench and to maintain a hydraulic gradient. Groundwater removal would also maintain the hydraulic gradient, which may be accomplished through pumping and/or the planting of trees having high evapotranspiration rates. The hydraulic gradient would deter DNAPL and groundwater migration toward the new creek channel. Recovered creosote would be shipped off-site for reuse, or for disposal at an appropriate waste facility. Co-produced groundwater would be treated at the on-site wastewater facility, then sent to the Carbondale POTW for final treatment. An industrial discharge permit is required for the effluent that is sent to the POTW. A monitoring system would be installed to evaluate the effectiveness of this remedy.

For a more detailed description of the channel relocation and DNAPL barrier trench, refer to the *Glade Creek Channel Relocation Pre-Design Investigation Summary Report*, revised May 2001.

5.3 Glade Creek Sediment Excavation

The proposed remedy requires that Beazer excavate approximately 3,500 cy of visibly contaminated sediments from Glade Creek. The sediments would be dewatered and transported to the CAMU. The sediments that were selected for excavation were identified during a 1996 field investigation that identified sediments that were visibly or potentially impacted by creosote or other site-constituents. The excavation would begin at a point approximately 350 feet upstream of the grout blanket and extend to 3,800 feet downstream of the grout blanket, to a point approximately 100 feet upstream of the confluence with Piles Fork.

Trees and brush would be cleared as necessary to allow access for the excavation equipment, and temporary roads would be constructed adjacent to the creek. To the extent possible, timber mats or other low-impact systems would be used to minimize long-term impacts to the surrounding vegetation and habitat.

Excavated sediment would be transported to the CAMU using conventional dump trucks. Necessary measures would be taken to avoid release of any free liquids from the sediment during transport. Within the CAMU, the sediment would be combined with waste pile soils to provide a more homogeneous material that could be easily placed and managed. The CAMU leachate collection system would handle any residual water from the sediment.

5.4 DNAPL Recovery at Former Process Area

Beazer proposes to extract creosote from the former process area for off-site reuse or disposal. The currently mapped horizontal extent of DNAPL extends from the former process area to the off-site spill area. Beazer completed a pilot DNAPL recovery testing to find a suitable site for DNAPL recovery. Test wells were installed in two areas where DNAPL was observed in groundwater monitoring wells, one that is west and upgradient of Glade Creek, and the other in the former process area. Only the well in the former process area was successful at recovering creosote. Groundwater that accumulates in the well would be treated at the on-site wastewater treatment facility then sent to the Carbondale POTW. Additional recovery wells may be installed to further remove free-product. For a more detailed description of this proposed remedy, refer to *DNAPL Recovery Pilot Testing Results*, July 2001.

5.5 Smith Ditch

Smith Ditch originates at the site, having as its headwaters an underground water collection system from the former process area, and a roadside ditch. The ditch passes through a wetland, then a portion of the site used for agriculture, through a neighboring farm, and then discharges into Glade Creek off-site, to the north. Beazer would plug the culvert that discharges from the underground collection system to eliminate this discharge point, thereby preventing further contamination of the waterway from the former process area. A plan for managing the surface water from the proposed surface cover of the former process area would be required in the final design documentation. The soils and sediments in the Smith Ditch wetland will require further characterization of contamination levels, and may be subject to a remedial measure such as placement within the CAMU.

5.6 Backfilling of the Small Unnamed Pond

Under the proposed remedy, Beazer would drain and fill a 6,000 square-foot pond within the off-site spill area, west of Glade Creek. The bottom of the pond likely intersects the subsurface extent of contaminated soils and free-product, as evidenced by an iridescent oily sheen on the water surface, and dark, creosote-like staining along the banks. The pond lacks aquatic plant life, surrounding vegetation, or any other type of habitat structure, and appears to be excavated. Based on these conditions, the pond is proposed to be filled in to eliminate it as a potential human and environmental exposure point, as well as a potential source of contamination to Glade Creek during high-flow events.

Following pumping, the pond water would be treated at the on-site wastewater treatment system, and then discharged to the Carbondale POTW. Clean fill would be placed and compacted in the hole to within six inches of the surrounding grade. The top six inches would be filled with topsoil and seeded with native grass.

5.7 Monitored Natural Attenuation of Creek Sediment Contamination

The proposed remedy would require that Beazer use monitored natural attenuation (MNA) as a remedy for the creek sediments. Natural attenuation of organic compounds occurs through dispersion, dilution, volatilization, and breakdown through natural biological, physical, and chemical forces. Natural attenuation is considered as an appropriate remedy only after source control is completed; site conditions must be conducive to its success. When natural attenuation is proposed as a remedy, USEPA policy requires the development of a *MNA Analysis Plan* that predicts how and when any residual contaminants will break down and disperse, based on the compounds and site conditions. A *MNA Analysis Plan* schedules monitoring to evaluate the natural attenuation progress against expectations, and includes a contingency remedy to become activated if the attenuation does not behave as anticipated, or there is evidence that unacceptable levels of contamination are present.

At the facility, MNA is proposed for some of the sediments in Smith Ditch, Crab Orchard Creek and Piles Fork Creek. An initial MNA evaluation is found in the *Summary of Field Investigation and Modifications to the IGMP Monitoring Well Network;* a comprehensive MNA Plan will be required for approval by USEPA. The preliminary report supports the hypothesis that natural attenuation is already occurring in the waterways. The removal of contamination sources is necessary to accurately measure anticipated attenuation.

5.8 Monitoring Well Decommissioning

Beazer would decommission thirty-seven wells that have been eliminated from the site-wide groundwater monitoring network. This would minimize the wells' potential to serve as possible long-term migration pathways for DNAPL and site constituents between hydrologic units. That is, the decommissioning would minimize the potential for DNAPL to migrate downward. The well casings would be overdrilled and the boreholes would be filled with a bentonite grout mixture.

5.9 Long-term Monitoring of Containment of Contaminated Groundwater

Long-term post-remediation groundwater monitoring is proposed, for a period of 30 years or more. Twenty-nine wells have been selected to provide site-wide coverage of the site perimeter and various hydrogeologic units to monitor for potential off-site migration of site constituents. The monitoring will be performed as described in the *Proposed Modifications to the Interim Groundwater Monitoring Program*, November 1997. If contaminated groundwater appears to be migrating out of the containment zone, additional corrective measures may be needed.

5.10 Waste Pile Containment

The proposed remedy requires Beazer to transfer two soil waste-piles to the CAMU if sampling shows that they are contaminated beyond safe exposure levels. The 10,000 cy piles were created during an earlier remedy when various contaminated soils were consolidated within a central location and fenced.

5.11 Institutional Controls

The proposed remedy requires that institutional controls be imposed at the site. An institutional control is a type of administrative or legal risk-control remedy that limits the use of a site or resource. Examples include easements, deed restrictions, covenants, and zoning ordinances. An institutional control should be used with source control and cleanup measures, and is meant to reduce the risk of human exposure to any contamination that remains past the remedial phase of a site cleanup. At the facility, future redevelopment would be limited to industrial uses, disclosure of potential hazards would be provided to current and future onsite construction workers through a Health and Safety Plan, and any use of groundwater would be prohibited. A precise set of institutional controls will be proposed in the *Corrective Measures Final Design Plan*.

5.12 Corrective Action Management Unit (CAMU)

A 5.5-acre lined, capped, and engineered landfill is proposed to be constructed on-site for the long-term containment and management of approximately 18,000 cubic yards of contaminated materials and demolition debris. The landfill would be constructed under the RCRA requirements for a CAMU. Based on the surface area and anticipated volume of materials, the CAMU would be approximately 17-feet high, shaped like a mound with sideslopes ranging from two to 33 percent, and surrounded by soil berms.

5.12.1 CAMU Location

The proposed remedy requires that the CAMU be located on top of two former surface impoundments which were closed and capped per RCRA regulations in 1991. This location is consistent with RCRA policy to use a previously impacted area for a CAMU, thereby allowing more of the remainder of the site to be reused. Depending on engineering constraints and the volume of CAMU fill materials, the preferred location may include some additional surrounding areas. An alternative location is an impacted area east of the impoundments which will be considered if engineering and site constraints render the preferred location undesirable (see Figure 6).

5.12.2 Preferred Location

The proposed location for the CAMU has expansion capacity onto adjacent areas to the south and east. The impoundment surface cover would be compacted as an initial step in preparing the area for construction of the CAMU. Compacted fill would then be placed to achieve a subgrade configuration for the leachate collection system to flow to a single, common collection point at the north-central end of the impoundments. The advantages of using the surface impoundment location are these:

1. combining the surface impoundment closure with the CAMU consolidates the activities required for long-term management of contaminated materials (i.e., the existing groundwater monitoring network of wells associated with the RCRA-closed surface impoundments can be used for the CAMU as well);
2. some of the existing surface water management features associated with the former impoundments can be used for the CAMU; and
3. this location maximizes the area available for future redevelopment of the site.

Note on History of Surface Impoundments: Beazer closed the surface impoundments in two stages during 1988 and 1991. Sludge was removed, stabilized, and transported to a hazardous waste landfill for disposal and a surface cover system (vegetated cap) was installed. The closed impoundments have a lime-treated subgrade, compacted clay fill, and a surface cover consisting of (from bottom to top): a clay barrier; a geotextile fabric; a 20-mil polyvinyl chloride (PVC) synthetic membrane; a second layer of geotextile fabric; a 12-inch thick sand and gravel drainage layer with perforated drain pipes; and a vegetated topsoil cover. Topsoil placement, final grading, and the establishment of a grassy cover were completed in 1991. The *Closure Documentation Report*, December 1991, describes the closure in detail.

5.12.2 CAMU Engineering Features

Liner and Leachate Collection System: Consistent with hazardous-waste regulated-landfill requirements, the CAMU design includes a double liner and leachate collection system. The liner and leachate collection system design includes (from bottom to top): a 12-inch compacted clay layer; a flexible membrane liner, a 12-inch drainage layer (i.e., sand) and/or geosynthetic drainage composite; a non-woven geotextile; a second flexible membrane liner, a geosynthetic drainage composite; and a minimum 12-inch soil protection layer. The flexible membrane liners would be made of high-density polyethylene (HDPE). Tests performed by Beazer using HDPE at other wood-treating sites have shown this design to be compatible with the containment materials at this site.

The conceptual design of the primary leachate collection system includes a geosynthetic drainage composite to collect leachate throughout the containment area. This consists of perforated piping along the base of the subgrade to convey leachate to a collection sump, a sidewall riser pumping system to transfer leachate to a vault within the perimeter berm, and piping from the vault to an exterior collection tank(s). Any tanks that would be need to temporarily store leachate, and which are not part of the existing, on-site, permitted water treatment system, would be designed as specified in Illinois hazardous waste regulations.

The double liner and leachate collection system would include a leak detection system between the upper and lower liners. The leak detection system will include materials to collect and accumulate any leachate that may migrate through the primary leachate collection system and the uppermost liner. Similar to the primary leachate collection system, these materials would be collected in a sump and pumped to a collection point.

The rate of leachate accumulation in the leak detection system will be compared to an "action leakage rate" to assess the need for remedial measures to minimize the rate of leachate migration through the liner system.

Cover System: Two multi-layer final cover system designs are being considered for the CAMU. Alternative One consists of 24 inches of compacted clay having low permeability, overlain by a six-inch vegetated topsoil layer. Alternative Two is a hazardous waste-compliant cap consisting of (from top to bottom) a six-inch vegetated topsoil layer, a 24-inch soil protection layer, a 12-inch soil drainage layer, an HDPE liner, and a 24-inch low permeability soil layer. These designs represent the low-and high-end construction costs, respectively, with corresponding leachate generation rates. Either cover would have erosion control features and would be vegetated with native perennial grass having dense root systems and rapid growth.

Leachate in a landfill is generated when rainwater percolates through the cover barrier. A cover may be more or less permeable thus allowing varying degrees of rainwater infiltration. When infiltrated rain water comes into contact with hazardous fill materials it "picks up" the contamination and moves it. Therefore, leachate must be properly managed. At the Beazer CAMU, any leachate would be collected in a storage tank and transported off-site for disposal at an appropriate facility. Alternatively, depending upon the characteristics of the leachate, it may be treated using the existing on-site wastewater treatment system.

Cover Alternative One, which has a low capital cost, has a high leachate generation rate. Alternative Two has a high capital cost, but a low leachate generation rate. Computer modeling using the Hydrologic Evaluation of Landfill Performance software estimates that leachate generation rates for these designs range from approximately zero to 26,000 gallons per acre per year. Cover design considerations also include the bearing capacity of the underlying and consolidated materials, potential for gas emission, climate stresses, maintenance requirements, and landfill regulations. Any selected cover system would be required to do the following:

1) minimize the potential for human or environmental exposure,
2) minimize infiltration and leachate generation rates,
3) accommodate long-term maintenance, and
4) be vegetated to prevent erosion.

Storm water management will be proposed in the final design phase of the site remedies. During and following construction, erosion and sedimentation controls, as well as storm water management, will follow best management practices and meet applicable state and/or local requirements. Following construction and consolidation of the materials, rain falling within the bermed areas would be collected in the leachate collection system and treated by the existing on-site treatment system.

5.12.3 CAMU Fill Materials

Once the liner and leachate collection system are constructed, soils and sediments would be excavated and transported to the CAMU and compacted. Excavated materials may need gravity dewatering and/or addition of stabilization agent(s) prior to their transport. The excavated Glade Creek sediments would be combined with the much drier soils from the waste piles and the former process area to provide suitable bearing capacity for subsequent surface cover construction. If any demolition debris is placed into the CAMU (e.g., building or foundation materials from the former process area or Glade Creek grout blanket materials) a sufficient buffer of compacted soils (e.g., three feet) would protect the underlying liner system. Similarly, demolition debris would be covered by a soil layer sufficient to protect the overlying cover.

The following materials were selected for containment within the CAMU (the values are approximate):

1. 10,000 cubic yards (cy) of soil from two on-site waste piles;
2. 3,900 cy of sediments excavated from Glade Creek;
3. 500 cy of miscellaneous debris such as excess soils, concrete tank supports;
4. the 700-foot cement grout blanket and liner, currently lining Glade Creek;
5. 2,600 cy of soils excavated for the groundwater interceptor trench;
6. 570 cy of stained coal tar areas soils from the former process area; and
7. potential additional materials depending on further characterization (i.e., 900 cy of sediments from Smith Ditch

Samples will be collected from the consolidated materials prior to surface cover construction to document the nature of the materials contained within the CAMU. The analytical data will compared to the applicable standards for CAMU-eligible waste, and be presented in a CAMU construction report. The specific details of the sampling program will be developed during the detailed design of the CAMU, as part of the RCRA Corrective Measures Final Design Plan.

5.12.4 CAMU Justification per RCRA Requirements

The USEPA and the IEPA have promulgated seven decision-making factors when considering construction of a CAMU, as identified in 35 Illinois Administrative Code (IAC) 724.652(c)(1-7). The following subsections describe the Beazer CAMU per the Federal and State regulatory requirements.

5.12.4.1. Implementation of Reliable, Effective, Protective and Cost-Effective Remedy

The CAMU is an effective and cost-efficient choice for the containment and management of the contaminated media at the facility. Without the CAMU, land disposal regulations (LDRs) would require that remediation wastes be shipped off-site for incineration. This approach has a considerable cost yet would not provide a proportional increase in the overall effectiveness of remediation. The cost-effectiveness of in-situ bioremediation was also analyzed and dismissed for the same reasons. The bioremediation soil remedy would cost approximately 50% more than the soil cover, and would not only not meet all appropriate regulations but might not be as effective in controlling the risk of human exposure to contaminated soils.

The reliability of the CAMU would be maintained through careful engineering design and construction, long-term systematic maintenance, and regular inspections. Long-term reliability would also be ensured through regular groundwater monitoring to evaluate CAMU performance and to identify any leaks for repair. The materials, equipment, and technologies chosen are typical for this sort of project and have a successful performance record.

5.12.4.2. Protection of Human Health and the Environment

By isolating the contaminated materials within the proposed CAMU, risk of human and environmental exposure is greatly reduced or prevented. Further, the potential for impacted areas to serve as ongoing or future "source areas" of contamination is greatly reduced.

Over the short term, implementation of the CAMU might increase the risk of human and environmental exposure to site-related constituents during its construction. Exposure could occur during materials excavation and handling activities via direct contact, ingestion, and inhalation of dust or volatilized constituents. The potential also exists for increased worker safety concerns associated with the operation of heavy equipment. Such increased short-term risks are common to any other remedial alternative for the site. However, engineering controls and precautionary measures would be implemented to effectively minimize potential risks during construction. Workers would be required to follow a site-specific Health and Safety Plan for emergency response, dust emissions control, and personal protective equipment requirements. Risk would also be minimized by an anticipated relatively short construction period.

5.12.4.3. Inclusion of Unaffected Areas in the CAMU

The engineered containment area is proposed to be constructed on top of the former RCRA surface impoundments. Given the potential for technical or administrative issues associated with consolidating materials there, Figure 6 shows both an expanded area around the former impoundments and an alternative location. Both the expanded area and the alternative area have been identified based on a number of site-specific considerations, including their currently impacted state.

5.12.4.4. Minimization of Future Releases

The proposed CAMU is a source-control measure that would consolidate and manage the various contaminated media moved there from around the site. Several design features minimize the potential for future releases of contaminants into the environment including surrounding soil berms, a double liner system, leachate collection and leak detection system, and cover system. Post-closure requirements include periodic maintenance, inspection, and repair to ensure the integrity of the engineered system. Any generated leachate would be subject to collection, treatment, and disposal requirements.

5.12.4.5. Expedition of Remedial Action

An on-site engineered landfill, designated as a CAMU, would expedite remedial action at the facility. Building a CAMU precludes the additional testing, approvals, permits and other land disposal requirements that are required with off-site shipping of hazardous materials. Furthermore, the proposed design and technologies have been successfully applied at similar sites using only standard construction equipment and techniques. Therefore, the proposed CAMU design bypasses any required testing and analysis, and consequent delays, that accompany proposed new technologies and novel approaches. Accordingly, the construction period for the Beazer CAMU is anticipated to be approximately six months.

5.12.4.6. Reduction of Mobility, Toxicity or Volume of Impacted Media

Of concern is the long-term potential for resuspension and downstream migration of contaminants via groundwater, surface water runoff, dust generation, or volatilization. The proposed CAMU, by providing long-term consolidation and containment of impacted soils and sediments, would reduce or eliminate their mobility. The CAMU includes these features designed to prevent and mitigate potential releases: a double liner system, a leachate collection system, and a cover system to minimize leachate generation. The final cover system would also provide a barrier between humans, plants, and animals and the contamination.

5.12.4.7 Minimization of Affected Area

The proposed remedial approach minimizes the affected area in two ways. First, as impacted soils and sediments are excavated, transported, and consolidated within the CAMU, the total area of the site having impacted soils and sediments decreases. Approximately 18,000 cy of soil and sediment from around the site would be consolidated within a smaller, discrete area. Second, the CAMU would be constructed atop the closed surface impoundments, thereby reducing the number of long-term remedial management areas by one. Notwithstanding, any other location proposed by the public would be considered for the CAMU.

5.12.5 CAMU Summary

The proposed CAMU is an effective approach to managing the remedial waste at the facility, considering the hydrological and environmental characteristics of the site, the volume, physical, and chemical characteristics of the wastes, the potential for contaminant migration and exposure to human and environmental receptors. The consolidation and containment of contaminated soil, waste piles, various debris, and sediments would prevent long-term exposures to humans and the environment that are currently uncontrolled. The remedy meets the RCRA evaluation criteria for establishing a CAMU. Based on current information, the proposed CAMU is an appropriate balance of risk-control and cost-effectiveness.

6.0 Summary of Alternatives (These are described and analyzed in the November 1997 *Focused Feasibility Study, the CAMU Demonstration Report,* and the *Glade Creek Channel Relocation Pre-Design Investigation Summary Report*, May 2001)

6.1 Alternative One, No-Action The no-action alternative is often evaluated to establish a baseline for comparison with alternatives where some remedial action is taken. Under this alternative, Beazer would take no further action to control DNAPL discharge to Glade Creek or to prevent exposure to soil contamination. It should be noted that at the facility this characterization would not be entirely accurate since some interim remedial measures have been completed since the Order became effective (i.e., placement of soil covers, installation of Glade Creek grout blanket and DNAPL collection system, partial dismantlement of facility, surface impoundment closure, groundwater monitoring and soil-waste piling).

6.2 Alternative Two, Recommended Alternative from the 1995 Draft Feasibility Study

This alternative includes installing two DNAPL/groundwater interceptor trenches, maintaining the Glade Creek grout blanket, groundwater monitoring, and excavation of 34,500 cy of soils for biological treatment in an engineered land treatment unit. The excavated soil areas would be backfilled with treated soils and the excavated sediments would be replaced by stone gravel. The soil remedy would be completed over a 10-year time-frame. A long-term groundwater monitoring network would be installed.

6.3 Alternative Three, Currently Proposed Remedies (Preferred Alternative)

This alternative includes these measures: 1) construction of a CAMU; 2) excavating sediments from Glade Creek for placement within the CAMU; 3) constructing a surface cover for soils in the former process area that are above 10^{-6} human-health risk criterion; 4) placement of waste-pile soils and additional materials from grading the former process area into the CAMU; 5) relocating a segment of Glade Creek and constructing an interceptor barrier trench; 6) installation of a DNAPL recovery well in the former process area; 7) plugging the discharge culvert to Smith Ditch; 8) backfilling the small unnamed pond; 9) decommissioning of wells not included in the proposed groundwater monitoring program; 10) implementing institutional controls; 11) monitored natural attenuation of contaminated sediments; and 12) implementing a long-term contaminated groundwater containment and monitoring program.

7.0 Evaluation of the Proposed Remedy and Alternatives using RCRA General Standards for Corrective Measures

Because the “no-action” alternative is not protective of human health and the environment, it is not considered further in this analysis as an option for this site. Refer to the CAMU remedy analysis, above, for a detailed discussion of the how the CAMU meets many of the evaluation criteria in this section.

7.1 Overall Protection of Human Health and the Environment

Both Alternatives Two and Three are protective of human health and the environment to varying degrees.

7.1.1 Soil Treatment Remedy (Alternative Two)

Alternative Two is limited by these factors:

1) the soil removal and treatment plan does not include all the soils that exceed risk-based criteria, and
2) arsenic, a metal, would not be remedied by the biological treatment and would remain as an exposure risk.

By comparison, the soil cover of Alternative Three would be protective of human-health exposure risk at the 1×10^{-6} human-health risk criterion. The proposed soil cover would eliminate direct contact, ingestion, and inhalation exposure routes, and include the areas of elevated arsenic levels. Further exposure protection would be attained through institutional controls limiting future redevelopment of this property to industrial use, and notifying workers of the hazards through a site-specific Health and Safety Plan.

7.1.2 Glade Creek DNAPL Remedy

Under Alternative Two, the existing grout blanket would be maintained and extended to provide a discharge barrier upstream and downstream of the current blanket. The grout blanket remedy is currently ineffective due to cracking, limited DNAPL recovery, and prevention of DNAPL migration, and may not be adequate to protect human health and the environment. Under Alternative Three, the stream would be relocated to an area where DNAPL and contaminated groundwater are not present. Human and environmental exposure would therefore be eliminated. The DNAPL barrier/interceptor trench would facilitate free-product recovery and intercept contaminated groundwater for treatment. The trench would be designed to maintain hydraulics to prevent further DNAPL migration and thus protect ground water and prevent potential new areas of groundwater discharge to surface water, thus protecting human health and the environment.

The two interceptor trenches proposed in Alternative Two were determined to have limited effectiveness, as discussed below, and therefore would have limited capacity to protect human health and the environment.

7.1.3 Institutional Controls

Alternative Three is the only alternative that includes institutional controls to limit how the facility may be reused and prohibit groundwater consumption, thereby affording a greater measure of human health protection.

7.1.4 Long-term Groundwater Containment and Monitoring

Both Alternatives Two and Three propose long-term groundwater containment and monitoring to ensure that constituents that are above risk-based screening levels are not migrating out of the containment zone.

Only Alternative Three proposes these additional measures to prevent human and environmental exposure to contaminated media: plugging the discharge to Smith Ditch, backfilling the small unnamed pond, and the decommissioning of wells that will be dropped from the long-term groundwater containment and monitoring program.

Both alternatives would require current and future workers to follow a Health and Safety Plan to protect them from short-term exposure risks during construction, and when working in the redeveloped site.

7.2 Attain Media Cleanup Standards

The alternatives were compared to the remedial action objectives (RAOs) that were established for this facility.

7.2.1 Minimize the discharge of visible creosote and site-related constituents from shallow groundwater into Glade Creek

The approach proposed under Alternative Three is to relocate the segment of the creek channel that passes through the off-site spill area, and to construct a DNAPL barrier/interception trench in the old creek bed. This remedy would be most effective at attaining this goal as it is designed not just to minimize, but to eliminate, the creosote and contaminated groundwater discharge to surface water. The extended and repaired grout blanket and underdrain collection system advocated under Alternative Two is a measure to minimize the DNAPL and contaminated ground water discharge. However, the grout blanket remedy has proven to be unreliable. Creosote continues to discharge into the creek at both ends of the blanket and from crack in the cement. Repairs to the proposed modified system would likely be necessary in the future, based on the performance problems with the current system. Alternative Three would eliminate this risk.

7.2.2 Minimize the discharge of site-related constituents from surface soil and sediment into Glade Creek surface water

Both Alternatives Two and Three adequately address this RAO. Alternative Two would minimize the potential discharge of site-related constituents from surface soil and sediment by excavation and treatment of select sediment and surface soils. Alternative Three comparably addresses the discharge through excavation and containment of sediment from select Glade Creek sediment and soils, as proposed in the sediment excavation and interceptor trench remedies.

7.2.3 Minimize the potential for human and environmental exposure to surface soil containing site-related constituents at levels that may pose unacceptable risk given the anticipated future use of the site

Alternative Two proposes to remove some, but not all soils from the former process area that exceed 1×10^{-6} human-health risk-based criterion. By contrast, Alternative Three proposes a remedy that would be protective at the 1×10^{-6} risk criterion, thereby being more protective by an order of magnitude. The soil cover remedy would be constructed per the requirements of the soil remedial objectives for industrial properties, applying the *Illinois Tiered Approach to Corrective Action Objectives* risk-based standards. The containment and management of contaminated media within the CAMU proposed in Alternative Three would isolate it from human and environmental exposure as a long-term remedy.

7.2.4 Minimize the potential for human consumption of groundwater that contains site-related constituents at levels that pose unacceptable potential risks

A City of Carbondale ordinance prohibits the use of groundwater as a potable drinking-water supply within the city limits. The adjacent rural area is served by the Lakeside Water District. Therefore, there are no known groundwater users within a two-mile radius of the site. Additionally, the groundwater monitoring wells that are screened in the deeper “D” and “E” units (where hydrologic conditions are amenable to productive wells) indicate that site-related constituents are not present at levels that exceed risk-based criteria as specified in TACO. Perimeter monitoring wells indicate that contaminated groundwater is not migrating off-site above risk-based screening levels. Therefore, it is unlikely that there exists a risk of human consumption of contaminated groundwater from the site.

7.3 Control the Sources of Releases

Both Alternatives Two and Three address source control. As discussed above, the Glade Creek Channel Relocation and Interceptor Trench remedy proposed in Alternative Three would be more effective at protecting Glade Creek from DNAPL and groundwater discharge than the grout blanket remedy proposed in Alternative Two. The interceptor trenches proposed in Alternative Two were determined to be ineffective based on further investigation of site conditions, following the 1995 *Draft Feasibility Study*. Alternative Three has the following additional source control measures that are not proposed in Alternative Two: construction of a DNAPL recovery well in the former process area, plugging the discharge culvert into Smith Ditch, backfilling the small unnamed pond, and the decommissioning of wells not included in the proposed groundwater monitoring program. As a long-term remedy, the containment and management of contaminated media within the CAMU, as proposed in Alternative Three, would isolate it from physical and biological dispersion forces and prevent contamination from migrating to other media.

7.4 Comply with Standards for Management of Wastes

Both Alternatives Two and Three are designed to comply with the Clean Water Act requirements for dredging and disposal activities associated with excavating sediments from a waterway. Alternative Three is based on the industrial setting human-health criterion and other design requirements of the Illinois TACOs, e.g., institutional controls and engineered barriers. (The TACO regulations were promulgated in 1997, after the Alternative Two remedies were proposed in the 1995 Draft Feasibility Study). The design of the CAMU proposed in Alternative Three follows RCRA and Illinois regulations and criteria.

8.0 Selection Decision Factors

Note that Alternative Three proposes a number of remedial measures that are not proposed in Alternative Two.

8.1 Long-term Reliability and Effectiveness

The proposed remedy would reduce the risk of further DNAPL and contaminated groundwater discharge into Glade Creek by relocating the stream channel to a clean area off-site, and by maintaining the hydraulics in the old channel to prevent source migration to the new channel. Compared to Alternative Two, this is a more reliable long-term solution that avoids the risk of further stream contamination should the cement grout blanket degrade, or should the DNAPL find a new discharge point along the stream channel. The proposed CAMU is a long-term containment and management remedy with systematic inspection and maintenance requirements to ensure reliability and effectiveness. The proposed soil cover would be a long-term barrier to avoid human and environmental exposure to contaminated soils which reduces groundwater infiltration. The interceptor trenches proposed in Alternative Two were determined to be ineffective, based on subsequent further analysis of site conditions. Both alternatives propose long-term groundwater monitoring to ensure that contamination is not migrating off-site.

8.2 Reduction of Toxicity, Mobility, or Volume of Wastes

The sediment excavation remedy proposed in both Alternatives would effectively reduce toxicity, mobility, and volume of contaminated sediment. The removal and biological treatment of soils, sediments, and waste piles proposed in Alternative Two would be more effective at reducing the toxicity and volume of the organic constituents in the soil of the former process area than Alternative Three would be, which proposes isolation of these media but not their treatment. The Glade Creek Channel Relocation and Interceptor Trench would reduce the mobility of DNAPL and contaminated groundwater, and reduce the toxicity of groundwater by removing DNAPL, which is a contaminant source to groundwater. The measures proposed to maintain hydraulic conditions so that sources move into the trench and do not migrate toward the new channel reduce their mobility.

8.3 Short-term Effectiveness

The short-term effectiveness analysis of the proposed remedial approach is based on the risk of impacts to human health and environment during the construction phase. Remedies that involve excavation and handling of contaminated media have an inherent risk of human and environmental exposure. Increased potential for exposure would occur during the excavation and materials handling of the Glade Creek Interceptor Trench remedy, the soil cover remedy, waste pile removal to the CAMU, and while backfilling the small unnamed pond. Exposure could occur through direct dermal contact, dust inhalation. Additionally, during any construction project there are inherent risks to the on-site workers as well as public safety hazards due to the presence of open excavations, noise, and dust generation, and increased traffic during equipment and materials transport. However, potential exposure and safety risk would be minimized through proper design and construction, and rules to follow as specified in the site-specific Health and Safety Plan (to be written as part of the Final Corrective Measures Design).

A Public Involvement Plan would inform the community of the planned construction and Beazer would work with local public safety officials to ensure that construction traffic risks are minimized. Potential exposure and safety issues would also be minimized by the relatively short construction period associated with the preferred alternative, which is anticipated to be approximately six months. By contrast, the soil treatment remedy proposed in Alternative Two would occur over an estimated ten-year period. This extended materials excavation and handling period would increase the potential for exposure to contaminated media and for construction-related accidents, although it would be reduced by the facility-specific *Health and Safety Plan*.

8.4. Capacity for Implementation

The preferred alternative is capable of being implemented because it is technically feasible, and would not be impeded by lack of available services or materials. The alternative involves proven technologies, equipment, and construction techniques and therefore is anticipated to be administratively feasible. The required services and materials are available locally as well as through national suppliers.

Alternative Two is limited by the proposed interceptor trench design and the use of biological treatment for soils and sediments. The proposed locations and depths of the interceptor trenches, as well as the low permeability of the soil, may limit the technical feasibility of the trenches. Testing would be needed to determine whether biological treatment would be a feasible remedy for the soils and sediments, given the site-specific conditions and material characteristics.

8.5 Cost

Table 1 presents the estimated capital, and operation and maintenance (O&M) costs for the three alternatives. Note that the "No-Action Alternative" includes the cost of groundwater monitoring. The values are in 2003 dollars, and assume a 30-year implementation time frame for the O&M portion. Alternative One does not include a contingency rate; Alternatives Two and Three use a 10% and 20% contingency rate, respectively. Unit costs for the same activities are applied consistently between the alternatives (e.g., excavation).

Table 1. Cost Comparisons of Alternatives

Alternative	Estimate Capital Cost	Estimated Annual O&M Cost	30-year O&M Present Worth	Total Estimated Present Worth
Alternative One, No-Action	$0	$90,000	$1,384,000	$1,384,000
Alternative Two, 1995 Preferred	$4,720,000	$336,300	$5,170,000	$9,890,000
Alternative Three, Currently Proposed	$6,330,000	$290,000	$4,460,000	$10,790,000

Based on the estimated capital and O&M costs, the proposed alternative is the most costly. However, of all the alternatives, the proposed alternative provides the greatest required level of human and environmental protection.

9.0 PUBLIC PARTICIPATION

Through this notice, the USEPA requests comment on the proposed remedy. The public comment period starts on August 5, 2003 and ends on September 22, 2003. If there is substantial interest in a public hearing, the USEPA will hold a public meeting at a location to be announced in Carbondale, Illinois, to discuss the Statement of Basis, and any additional remedial actions the public may propose.

Various background documents related to investigations, the CAMU, the remedies and Glade Creek will be available for review at the sites listed below:

Carbondale Public Library
405 W. Main St Carbondale, IL 62901
(618) 457-0354

Record Center, USEPA, Region 5
USEPA Waste, Pesticides and Toxics Division
77 West Jackson Boulevard, 7th Floor
Chicago, Illinois 60604
Phone (312) 353-5821
Hours: Mon-Fri, 8a.m. - 4p.m.

After considering the public comments, USEPA will summarize them and prepare responses in a second notice called “Final Decision/Response to Comments.” If a public meeting is requested, a newspaper notice will publish the meeting location in advance of the meeting.

Please note that the selected remedies may need to be modified, or additional remedies imposed, based on the performance and effectiveness of those selected, or on new information. Should new remedies be proposed, another Statement of Basis will be prepared.

This document will be incorporated into the Administrative Record. To send written comments or obtain further information, contact:

Ms. Carolyn Bury, Project Manager
U.S. Environmental Protection Agency
77 West Jackson Boulevard, DE-9J
Chicago, Illinois 60604
call toll-free 800 621-8431 or directly at (312) 886-3020

FIGURES